

NON-PUBLIC?: N
ACCESSION #: 9505020309
LICENSEE EVENT REPORT (LER)

FACILITY NAME: Browns Ferry Nuclear Plant (BFN) Unit 2 PAGE: 1 OF 7

DOCKET NUMBER: 05000260

TITLE: Reactor scram resulting from personnel error during surveillance testing caused the actuation of the ESF system.

EVENT DATE: 03/30/95 LER #: 95-004-00 REPORT DATE: 04/28/95

OTHER FACILITIES INVOLVED: N/A DOCKET NO: 05000

OPERATING MODE: N POWER LEVEL: 100

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR SECTION:
50.73(a)(2)(iv)

LICENSEE CONTACT FOR THIS LER:
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Compliance Licensing Engineer

COMPONENT FAILURE DESCRIPTION:
CAUSE: SYSTEM: COMPONENT: MANUFACTURER:
REPORTABLE NPRDS:

SUPPLEMENTAL REPORT EXPECTED: NO

ABSTRACT:

On March 30, 1995, at 1800 hours, the Unit 2 reactor scrammed during the performance of the Core and Containment Systems Analog Trip Unit Functional Test. During this test, alternate rod insertion solenoid valves opened (i.e., energized) and vented control air from the scram pilot air header, causing a low scram pilot air header pressure condition (less than 53 psig.), which initiated a reactor scram. The scram then resulted in the automatic actuation of the engineered safety feature (ESF) system due to a sensed low reactor water level condition. This event is, therefore, reportable in accordance with 10 CFR 50.73 (a)(2)(iv) as a condition which resulted in an automatic actuation of the ESF system. The root cause of the event was personnel error in that an Instrumentation and Controls technician prematurely repositioned the Anticipated Transient Without Scram mode switch from the 'TEST' to the

'NORMAL' position with a test signal present. Corrective actions involve appropriate personnel corrective actions for the individual in this event.

END OF ABSTRACT

TEXT PAGE 2 OF 7

I. PLANT CONDITIONS

At the time this event occurred, Unit 2 was operating at approximately 100 percent power. Units 1 and 3 were shutdown and defueled.

II. DESCRIPTION OF EVENT

A. Event

At 1800 hours Central Standard Time (CST) on March 30, 1995, Unit 2 experienced a reactor scram while the unit was at full power. Instrumentation and Controls (I&C) technicians utility, non-licensed! were performing Surveillance Instruction (SI) 2-SI-4.2.B-ATU (C), "Core and Containment Systems Analog Trip Unit Functional Test." This SI tests certain logic circuits that generate the Anticipated Transient Without Scram (ATWS) JC!/Alternate Rod Insertion (ARI) JD! signal for a reactor high pressure condition.

During performance of the SI, an I&C technician stationed at the analog trip unit (ATU) cabinet in Auxiliary Instrument Room

No. 2 increased the stable current amplitude which locked in the relay in the ARI initiation circuitry (Figure 1). In step 7.11.22 of the SI, the I&C technician was in the process of decreasing the stable current amplitude when a second I&C technician at the ATWS panel in Electric Board Room 2A prematurely repositioned the ATWS mode switch HS! from the 'TEST' to the 'NORMAL' position. The premature movement of the handswitch to 'NORMAL' before the ATWS/ARI logic was reset quickly vented the air from the scram pilot air header which caused a low scram pilot air header pressure condition (less than 53 psig.) and resulted in a reactor scram from Reactor Protection System (RPS) actuation.

When the scram pilot air header pressure decreased below 53 psig, the reactor scrammed as expected due to a sensed low

reactor water level condition. The reactor low level signal initiated the following primary containment isolation systems: group 2 - shutdown cooling mode of the residual heat removal system BO!; group 3 - reactor water cleanup system CE!; group 6 - primary containment purge and vent JM!, Unit 2 reactor zone ventilation VB!, refueling zone ventilation VA!, standby gas treatment system BH!, and control room emergency ventilation system VI! initiation; and group 8 - transverse incore probes IG! withdrawal.

At 2316 hours, the SI was re-performed in an attempt to duplicate the scram condition. However, the scram condition could not be repeated in the field. On March 31, 1995 at 0220

TEXT PAGE 3 OF 7

hours, the SI was satisfactorily completed. On April 2, 1995 at 1506 hours, the reactor was restarted and synchronized to the TVA system grid.

This event is reportable in accordance with 10 CFR 50.73 (a)(2)(iv) as a condition that resulted in an automatic actuation of the ESF system.

B. Inoperable Structures Components, or Systems that Contributed to the Event:

None.

C. Date and Approximate Times of Major Occurrences:

March 30, 1995 at 1630 CST 2-SI-4.2.B-ATU(C) commenced

March 30, 1995 at 1800 CST Step 7.11.22 of the SI was in progress when the reactor scrammed

March 30, 1995 at 2033 CST TVA provided a 10 CFR 50.72(b)(2)(ii) four-hour notification to NRC operations center that the reactor scrammed and the ESFs automatically actuated

March 30, 1995 at 2316 CST The SI was re-performed in an attempt to duplicate the scram

condition; the scram condition could not be repeated in the field

March 31, 1995 at 0220 CST The SI was satisfactorily completed

April 2, 1995 at 1506 CST The reactor was restarted and synchronized to the TVA system grid

D. Other Systems or Secondary Functions Affected:

None.

E. Method of Discovery:

This condition was discovered when the control room operations personnel licensed, utility! received alarms and indicators that the reactor tripped due to a sensed low reactor water level condition.

TEXT PAGE 4 OF 7

F. Operator Actions:

Once the reactor scrammed, Operations personnel responded to the scram in accordance with appropriate procedures, and the reactor was stabilized and safely brought to a shutdown condition.

G. Safety System Responses:

All safety systems responded as designed for this type of event.

III. CAUSE OF THE EVENT

A. Immediate Cause:

The immediate cause of the event was that the Unit 2 ATWS mode switch was prematurely repositioned to the 'NORMAL' position before the ATWS/ARI logic was reset. This switch movement quickly vented control air from the scram pilot air header causing a low scram pilot air header pressure condition (less than 53 psig.) and resulted in an RPS reactor scram.

B. Root Cause:

The root cause of the event was personnel error. An I&C technician prematurely repositioned the ATWS mode switch from the 'TEST' to the 'NORMAL' position. The procedure requires that the switch remain in the 'TEST' position with the logic signal present to prevent energizing the solenoid valves which vent the scram pilot air header.

IV. ANALYSIS OF THE EVENT

The ATWS/ARI system is designed as a redundant, independent and diverse reactor shutdown system. The ATWS/ARI system provides an alternate means of venting the scram pilot air header to generate a reactor scram in the event of an anticipated transient without the desired RPS response. As expected, the solenoid valves that vented the scram pilot air header remained energized until the initiation logic was reset. The ATWS instrumentation also affects parameters that initiate or control primary containment isolation and initiation of plant ventilation systems. In this event, control air was vented from the scram pilot air header resulting in the initiation of the ATWS/ARI, which caused the control rods to insert to safely shut down the reactor. All plant equipment responded as designed. Therefore, this event did not affect the health and safety of plant personnel and the public.

TEXT PAGE 5 OF 7

V. CORRECTIVE ACTIONS

A. Immediate Corrective Actions:

Operations personnel responded to the reactor scram and safely brought the plant to a shutdown condition. The SI was stopped. The ATWS mode switch was investigated to ensure that the correct contacts were opened. The switch was replaced and was bench-tested/examined for any evidence of contact wiper failure/sticking. However, the switch internals did not reveal any, adverse indications (e.g., contacts burned, cam or switch mechanism problems). The SI was reviewed to determine if any errors existed and then re-performed in an attempt to replicate the scram condition. However, the scram condition could not be repeated. The SI was then satisfactorily completed. An incident investigation was initiated to determine the root cause of the event and appropriate corrective actions.

B. Corrective Actions to Prevent Recurrence:

Corrective actions involve appropriate personnel corrective actions for the individual in this event.

VI. ADDITIONAL INFORMATION

A. Failed Components:

None.

B. Previous Licensee Event Reports (LERs) on Similar Events:

Although there have been previous LERs for personnel error where a control was inappropriately manipulated or operated out-of-sequence, none of the previous corrective actions would not have precluded this event.

LER 260/93004 addressed a high reactor pressure condition that resulted in an ATWS signal and initiated an ARI signal. The cause of the LER (260/93004) was inattention to detail in that an operator (utility, licensed) did not adequately evaluate the overall effects of ongoing SIs. This oversight subsequently caused a reactor scram. However, the corrective actions for LER (260/93004) would not have precluded this event (LER 260/95004) because the root cause of the previous LER was schedular in nature in that the unit Operator presumed that I&C personnel would notify him prior to each instrument being removed from service. In this LER (260/95004) operations personnel were informed at appropriate times as required in the SI so that no schedular conflicts existed.

TEXT PAGE 6 OF 7

VII. Commitments

None.

Energy Industry Identification System (EIIS) system and component codes are identified in the text with brackets (e.g., XX!).

TEXT PAGE 7 OF 7

Figure 1 omitted.

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